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不同耐铝性玉米自交系的营养特性

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The characteristics of nutrition in maize with different Al-tolerant

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摘要 采用溶液培养方法,研究了三类不同耐铝性玉米自交系的营养特性。耐铝自交系根系对Ca^{2+}、Mg^{2+}的平均吸收速率与对照相同或略有提高,而多数敏感自交系显著下降。铝处理后,各自交系对磷的吸收能力均呈下降趋势,铝敏感自交系降幅相对较大。各自交系对钾的吸收表现不一,与自交系耐铝性无明显关系。根系和地上部铝含量随铝处理浓度增加而增加,且敏感自交系根系铝含量增幅较大。植株吸收的铝主要集中在根系部位,自交系地上部相对铝含量与耐铝性无相关关系。铝处理可使多数自交系根系钙、镁含量降低,但耐铝自交系与对照无显著差异。铝处理后,地上部钙含量均高于根系;铝处理可显著降低耐铝自交系根系镁含量,但地上部相对镁含量高于敏感自交系。铝处理下,多数自交系根系钾含量有所降低,但与耐铝性无相关性。铝处理可使多数自交系根系和地上部铁、锰、铜、锌含量降低,不同耐铝性自交系类型间具有差异。

关键词： 自交系玉米 铝胁迫 营养特性 自交系玉米 铝胁迫 营养特性

Abstract： The characteristics of nutrition was studied in maize of inbred lines with different Al-tolerance by soluble culture. The results indicate that the average absorption rates of Ca^{2+}, Mg^{2+} of Al-tolerant inbred lines were similar or slightly higher than that of CK, however the absorption rates decreased significantly in Al-sensitive inbred lines. The absorption capability of phosphorus of inbred lines tended to decline after treated with Al, and the Al-sensitive inbred lines decreased more sharply. The absorption capability of K~+ of inbred lines was difference, the Al contents in plant were higher than that CK when treated with Al and increased with Al rates. and Al contents in root of Al-sensitive inbred lines increased more than that of Al-tolerant inbred lines. Al absorbed by plant mainly concentrates in roots under Al stress. There was not correlation between the relative Al content in shoot and the Al-tolerant ability. The contents of Ca and Mg in most inbred lines decreased except Z01 and Z07 (both Al-tolerant inbred line) when treated with Al and the content of Ca in shoot of inbred lines were higher than that in root, but not difference found in them. The Mg content in root of Z01 (Al-tolerant) dropped significantly with Al treatment, but relative Mg content in shoot of Z01 was higher than that of Z02 (Al-sensitive). The K content of inbred lines with Al treatment slightly reduced, however, the relative content of K wasn't consistent with Al-tolerance ability. The content of Fe, Mn, Cu and Zn of inbred lines showed same declining trend by Al treatment, but the difference of relative content among three kinds of inbred lines in the experiment was found.

Keywords：

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